Application Serial No: 10/037,808 Attorney Docket No. 79530
In reply to Office Action of 05 May 2004

AMENDMENTS TO THE CLAIMS

1. (currently amended) A semi-fuel cell stack comprising:

a housing;

an anode and a porous cathode in said housing;

an aqueous catholyte stream of hydrogen peroxide flowing within said housing;

an aqueous anolyte stream flowing in said housing; and

a membrane which allows selective ion transfer of OH^- ions through said membrane and into the anolyte stream and which inhibits transfer of hydrogen peroxide through said membrane ~~means~~ for preventing migration of said catholyte through the porous cathode and into the anolyte stream.

2. (currently amended) A semi-fuel cell stack according to claim 1 wherein said ~~migration preventing means~~ membrane is in contact with said porous cathode.

3. (currently amended) A semi-fuel cell stack according to claim 2 wherein said ~~migration preventing means comprises a material covering~~ membrane covers a surface of said porous cathode.

4. (currently amended) A semi-fuel cell stack according to claim 2 wherein said membrane is impregnated into said porous cathode.

5. (canceled).

6. (original) A semi-fuel cell stack according to claim 1 wherein said cathode comprises a catalyzed material.

7. (original) A semi-fuel cell stack according to claim 1 wherein said cathode comprise a carbon fiber matrix catalyzed with at least one of palladium and iridium.

8. (original) A semi-fuel cell stack according to claim 1 further comprising means for creating a plurality of flow channels for said catholyte attached to said anode.

9. (original) A semi-fuel cell stack according to claim 8 wherein said flow channel creating means is formed from an electrically non-conductive material.

10. (original) A semi-fuel cell stack according to claim 1 wherein said anolyte stream comprises a NaOH/seawater electrolyte stream.

11. (canceled).

12. (original) A semi-fuel cell stack according to claim 1 wherein said anode is formed from an aluminum containing material.

13. (original) A semi-fuel cell stack according to claim 1 wherein said catholyte comprises an aqueous sodium hypochlorite solution.

14. (original) A semi-fuel cell stack according to claim 1 further comprising:

at least two anodes within said housing;

at least two porous cathodes within said housing;

means attached to each of said anodes for creating a plurality of flow channels for said catholyte;

means attached to a surface of each of said porous cathodes for preventing migration of said catholyte through each said cathode; and

a plurality of anolyte flow streams within said housing with each of said streams flowing between a surface of one of said anodes and a surface of said migration preventing means.

15. (original) A semi-fuel cell stack according to claim 14 wherein:

each of said anodes is formed from an aluminum containing material;

each of said porous cathodes is formed from a porous material which has been catalyzed with at least one of palladium and iridium;

said anolyte comprises an aqueous seawater/NaOH solution;

said catholyte comprises an aqueous hydrogen peroxide solution; and

said migration preventing means comprises a membrane for allowing a flow of OH^- ions through the membrane into said anolyte stream while inhibiting the transfer of hydrogen peroxide through the membrane.

16. (currently amended) A method for operating a semi-fuel cell stack comprising the steps of:

providing a housing having at least one anode and at least one porous cathode;

flowing a catholyte stream into contact with said at least one porous cathode through at least one catholyte channel;

flowing an anolyte stream into contact with said at least one anode through at least one anolyte channel; and

providing each said cathode with a membrane which allows OH^- ions to pass through said membrane while inhibiting a flow of hydrogen peroxide through said membrane thereby preventing migration of said catholyte through the porous cathode and into ~~contact between each respective~~ the anolyte stream ~~and each respective catholyte stream~~.

17. (currently amended) A method according to claim 16 wherein:

said catholyte flowing step comprises flowing at least one stream of an aqueous hydrogen peroxide solution into contact with said at least one porous cathode; and

said anolyte flowing step comprises flowing at least one stream of a NaOH/seawater anolyte into contact with said at least one cathode.~~; and~~

~~said preventing step comprises providing each said cathode with a membrane which allows OH^- ions to pass through said membrane while inhibiting a flow of hydrogen peroxide through said membrane~~.

18. (original) A method according to claim 17 wherein said catholyte flowing step comprises flowing said hydrogen peroxide solution at a hydraulic pressure greater than the pressure of the NaOH/seawater anolyte.

19. (canceled).